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EXAMINER	
HANNON, CHRISTIAN A	
ART UNIT	PAPER NUMBER
2618	

NOTIFICATION DATE	DELIVERY MODE
11/20/2007	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/601,348	AUDINOT ET AL.	
	Examiner	Art Unit	
	Christian A. Hannon	2618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 October 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3-7,9,10 and 13-28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3-7,9,10 and 13-28* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1, 3-7, 9, 10 & 13-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Motley et al (US 3,931,584), hereinafter Motley, in view of the Applicant admitted prior art, hereinafter AAPA.

Regarding claims 1 & 7, Motley teaches analog to digital circuitry and method for generating a digital representation of an amplified analog signal at an input (Figure 3, Items 19 & 20; Motley), adjustable gain control circuitry for receiving a radio signal and outputting the amplified analog signal using a gain connected directly to a bit signal at an output of the analog to digital circuitry (Figure 3, Item 17; Column 3, Lines 8-10; Column 5, Lines 12-25; Column 7, Lines 32-35; Motley). However Motley fails to teach digital channel filtering circuitry for filtering said digital representation and digital processing circuitry for processing the output of said digital channel filtering circuitry. The AAPA teaches a receiver with digital channel filtering circuitry for filtering a digital representation and digital processing circuitry for processing the output of said digital channel filtering circuitry (Figure 1, Items 24 & 26; Page 6, [0018]; AAPA). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was

made to include the teaching of digital channel filters and digital signal processing into the teachings of Motley as Motley only introduces a specific automatic gain control (AGC) technique which reduces power level fluctuations in signal processing, however when used in the receiver structure of the AAPA Motley adds the benefit of reduced power fluctuations. Furthermore claim 7 reads as an analogous methods claim to the apparatus of claim 1 and is therefore similarly rejected, hereinafter all similar apparatus and method claims will be rejected under the same conditions.

With respect to claim 3 & 9, Motley and the AAPA teach the receiver and method of claims 1 & 7 respectively, furthermore Motley teaches wherein said gain is reduced by a first amount responsive to a most significant of said bit signal indicating that the analog to digital converter has exceeded a first saturation threshold (Column 5, Lines 12-14; Column 9, Lines 4-15; Motley).

In regards to claim 4, Motley and the AAPA teach the receiver of claim 3, wherein said adjustable gain control circuitry reduces said gain independent of said digital processing circuitry (Column 5, Lines 12-14; Column 9, Lines 4-15; Motley).

With regard to claim 5 & 10, Motley and the AAPA teach the receiver and method of claims 3 & 7 respectively, wherein said gain is reduced by a second amount responsive to asset of most significant bits of said bit signal indicating that the analog to digital converter has exceeded a second saturation threshold (Column 5, Lines 12-14; Column 9, Lines 4-15; Motley). Motley teaches quantized levels indicating up to 511 possible 'thresholds' (Column 5, Lines 14-16; Motley).

Regarding claim 6, Motley and the AAPA teach the receiver of claim 1, wherein said gain is increased responsive to a set of most significant bits of said bit signal indicating that the analog to digital converter is below a threshold (Column 5, Lines 12-14; Column 9, Lines 4-15; Motley). Motley teaches quantized levels indicating up to 511 possible 'thresholds' (Column 5, Lines 14-16; Motley).

With regards to claim 13 Motley teaches a receiver comprising adjustable gain control circuitry for receiving a radio signal and outputting an amplified analog signal using a gain connected directly to a single bit sample of digital representation at an output of an analog to digital circuitry (Figure 3, Items 19 & 20; Column 5, Lines 25-30; Motley). However Motley fails to teach digital channel filtering circuitry for filtering said digital representation and digital processing circuitry for processing the output of said digital channel filtering circuitry. The AAPA teaches a receiver with digital channel filtering circuitry for filtering a digital representation and digital processing circuitry for processing the output of said digital channel filtering circuitry (Figure 1, Items 24 & 26; Page 6, [0018]; AAPA). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to include the teaching of digital channel filters and digital signal processing into the teachings of Motley as Motley only introduces a specific automatic gain control (AGC) technique which reduces power level fluctuations in signal processing, however when used in the receiver structure of the AAPA Motley adds the benefit of reduced power fluctuations.

In regards to claim 14, Motley and AAPA teach the receiver of claim 13 wherein said AGC circuitry is coupled to receive an output signal from at least one low pass filter (Figure 1, Item 18; AAPA).

Regarding claim 15, Motley and AAPA teach the receiver of claim 14 wherein at least one input of said at least one low pass filter is coupled to an output of at least one mixer (Figure 1, Item 16; AAPA).

In regards to claim 16, Motley and AAPA teach the receiver of claim 15, wherein at least one input of said at least one mixer is coupled to an output of an amplifier (Figure 1, Item 14; AAPA).

Regarding claim 17, Motley and AAPA teach the receiver of claim 16, wherein at least one input of said amplifier is coupled to an output of a bandpass filter (Figure 1, Item 13; AAPA).

In regards to claim 18, Motley and AAPA teach the receiver of claim 14 wherein said at least one low pass filter comprises two low pass filters (Figure 1, Item 18 [I Path], Item 18 [Q Path]; AAPA).

Regarding claim 19, Motley and AAPA teach the receiver of claim 13 wherein said adjustable gain control circuitry comprises two gain control circuits (Column 3, Lines 23-25; Motley), whereby both sensitivity and interference tests may be conducted (Column 3, Lines 23-60; Motley).

In regards to claim 20, Motley and AAPA teach the receiver of claim 13 wherein at least an MSB bit of said digital representation at said output of the analog to digital

circuitry is directly connected to an input of said adjustable gain control circuitry (Column 7, Lines 64-67; Motley).

Regarding claim 21, Motley and AAPA teach the receiver of claim 13 wherein said analog to digital circuitry comprises two analog to digital circuits (Figure 1, Item 22 [I & Q Paths]; AAPA) one of said analog to digital circuits having an output directly connected to an input of said adjustable gain control circuitry whereby both sensitivity and interference tests may be performed (Column 3, Lines 23-60; Motley).

In regards to claim 22, Motley and AAPA teach the receiver of claim 1, wherein said gain is operable to be reduced and increased by different thresholds, respectively, whereby hysteresis is prevented (Column 4, Lines 62-67; Column 5, Lines 1-5; 20-24; Motley).

In regards to claim 23, Motley and AAPA teach the method of claim 7, wherein said gain is operable to be reduced and increased by different thresholds, respectively, whereby hysteresis is prevented (Column 4, Lines 62-67; Column 5, Lines 1-5; 20-24; Motley).

In regards to claim 24, Motley and AAPA teach the receiver of claim 13, wherein said gain is operable to be reduced and increased by different thresholds, respectively, whereby hysteresis is prevented (Column 4, Lines 62-67; Column 5, Lines 1-5; 20-24; Motley).

Regarding claim 25, Motley and AAPA teach the receiver of claim 1, wherein said gain is reduced by a first amount responsive to a most significant of said bit signal indicating that the analog-to-digital converter has exceeded a first saturation threshold,

wherein the most significant of said bit signal is directly connected to a gain control input of the adjustable gain control circuitry (Column 7, Lines 59-67; Column 8, Lines 1-10; Motley).

Regarding claim 26, Motley and AAPA teach the receiver of claim 1, wherein said gain is set by the output of the ADC without DSP intervention if the output of the ADC is close to saturation over a threshold (Column 9, Lines 5-16; Motley).

Regarding claim 27, Motley and AAPA teach the method of claim 7, wherein said adjusting the gain is set by the output of the ADC without DSP intervention if the output of the ADC is close to saturation over a threshold (Column 9, Lines 5-16; Motley).

Regarding claim 28, Motley and AAPA teach the receiver of claim 13, wherein said gain is set by the output of the ADC without DSP intervention if the output of the ADC is close to saturation over a threshold (Column 9, Lines 5-16; Motley).

Response to Arguments

3. Applicant's arguments filed 10/6/2007 have been fully considered but they are not persuasive.

Regarding Applicants argument of independent claims 1, 7 & 13 recite 'directly' or 'control directly' whereas Motley teaches 'indirect control.' The examiner disagrees, Motley in fact teaches 'direct' control as taught by the applicant (Column 9, Lines 4-7; Motley). The examiner makes it of record that the direct control affected by applicant's AGC circuit 32 of Figure 2, is analogous to the AGC circuit of Motley (Figure 3, Item 17; Motley). Further the applicant wished to argue that the addition of component 60 of

figure 3 of Motley rendered the teaching as 'indirect control,' again the examiner disagrees. Element 60 of Motley Figure 3, is an integral portion of the AGC circuit, the entire operation of the direct AGC circuit of one embodiment of Motley requires item 60 in order to feed the circuit and merely acts as a feed or input to the circuit (Column 7, Lines 60-69; Column 8, Lines 1-10; Motley). Further Motley does in fact teach an embodiment not requiring the input element 60 when a particular type of bit semantics is used (Column 8, Lines 45-48; Motley).

Regarding Applicant's argument that Motley fails to teach a 'single sample' portion of the recited claim, again the Examiner disagrees. The Examiner contends that the last sample before a count reaches a threshold is the ultimate determiner of whether or not a gain increase or decrease or neither is applied to the signal in the receiver. It is this last sample that determines the instantaneous change (Column 8, Lines 11-25; Motley). The Applicant further argued that Motley fails to teach a "radio signal." However Motley explicitly states that the novel use of direct bit controlled AGC may be applied in any channel medium, thereby not limited to include the teaching of RF signals, which is obvious to one in the receiver art (Column 9, Lines 17-20; Motley).

In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a

reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971). The Examiner's motivation for combining Motley with the AAPA was in order to affect a purpose for the AGC in a particular type of receiver, thereby benefiting the receiver with the benefits of Motley. The Examiner maintains the stance that all 103(a) rejections herein this rejection is proper. All claims remain rejected as previously set forth.

Regarding claims 22-24 the examiner has interpreted the different thresholds to be taught by Motley as Motley suggests possible different thresholds, which could obviously be applied as a designers choice (Column 4, Lines 41-60; Motley).

The examiner also wishes to express that while the applicant contends that an AGC is defined in text books in a particular way. The examiner agrees with this fact, and as a textbook would define an AGC as a feedback control loop to stabilize a gain, it does not explicitly teach how this is done. Motley teaches one conceivable way to achieve an AGC and is capable of calling whatever was deemed necessary as part of that AGC.

Conclusion

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christian A. Hannon whose telephone number is (571) 272-7385. The examiner can normally be reached on Mon. - Fri. 8:00 AM - 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ed Urban can be reached on (571) 272-7899. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

C. A. Hannon
November 8, 2007

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